

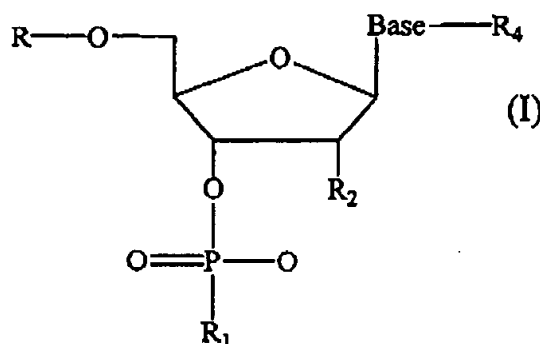
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In the claims:

Please amend the claims as shown below by deleting the material indicated by strike-through and adding the underlined material. This listing of claims will replace all prior versions and listings of claims in this application.

1 (currently amended). An antibody that specifically binds to a synthetic oligonucleotide having an organic protecting group covalently bound thereto, which antibody does not bind to said synthetic oligonucleotide when said organic protecting group is not covalently bound thereto;



wherein:

(i) said protected nucleotide of Formula I is a 3' nucleotide; R is a covalent bond to an adjacent nucleotide; R₁ is a protecting group; R₂ is H or -OH; R₄ is absent; and Base is a purine or pyrimidine base; or

(ii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is -OR₃; R₃ a protecting group; R₄ is absent; and Base is a purine or pyrimidine base; or

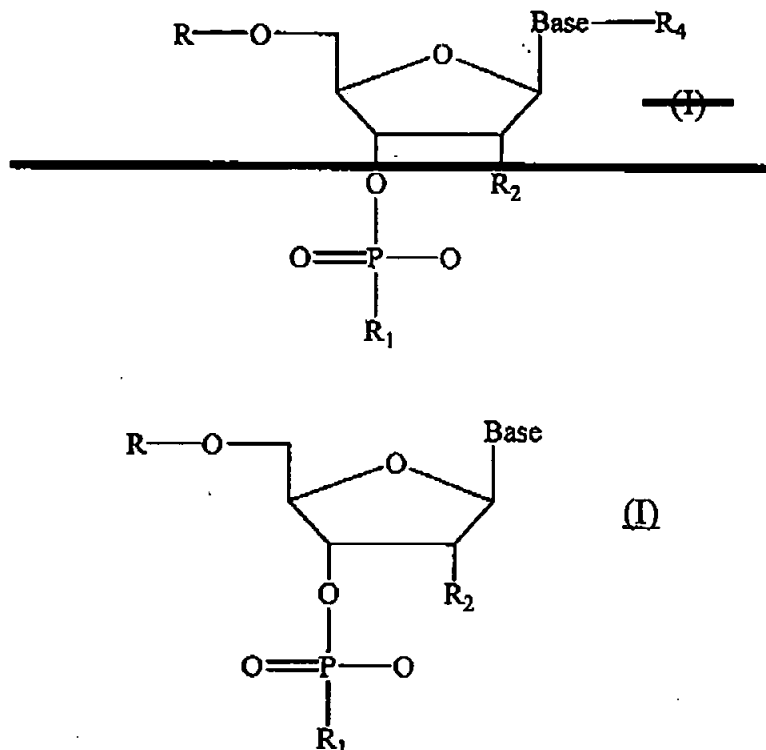
(iii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is H or -OH; Base is a purine or pyrimidine base; and R₄ is a protecting group bonded to an amino group of said base.

2-3 (cancelled).

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4 (currently amended). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides and has a 3' nucleotide, and wherein said 3' nucleotide is a protected nucleotide according to Formula (I):



wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a protecting group;

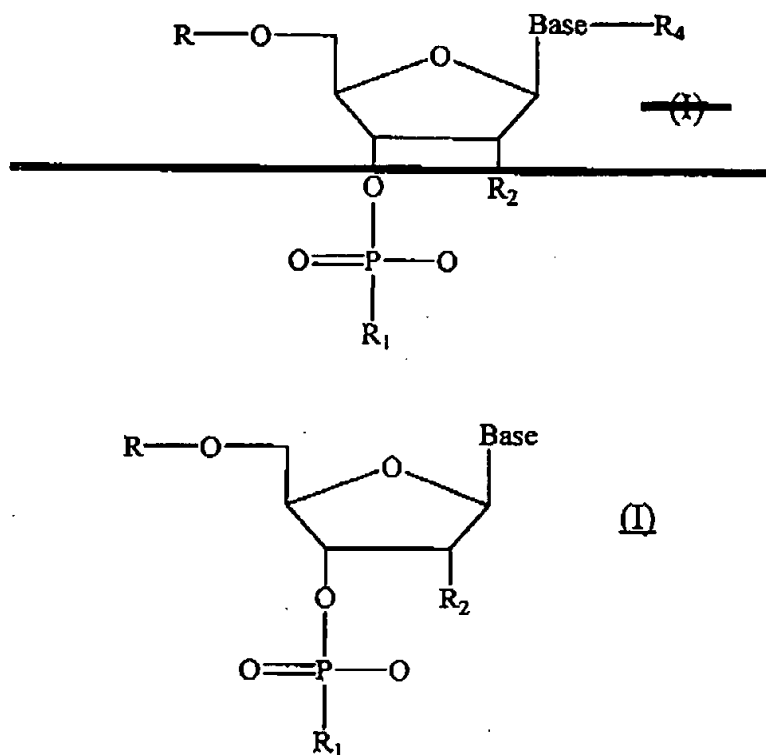
R₂ is H or -OH; and

Base is a purine or pyrimidine base.

5 (currently amended). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

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wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a covalent bond to an adjacent nucleotide;

R₂ is -OR₃;

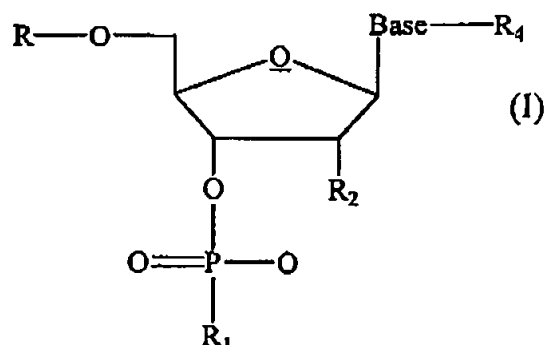
R₃ a protecting group; and

Base is a purine or pyrimidine base.

6 (previously presented). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

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wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a covalent bond to an adjacent nucleotide;

R₂ is H or -OH;

Base is a purine or pyrimidine base; and

R₄ is a protecting group bonded to an amino group of said base.

7 (previously presented). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected with a photolabile protecting group.

8 (previously presented). The antibody according to claim 1, which antibody is a polyclonal antibody.

9 (previously presented). The antibody according to claim 1, which antibody is a monoclonal antibody.

10 (previously presented). The antibody according to claim 1 immobilized on a solid support.

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11 (currently amended). An isolated cell that expresses an antibody according to claim 9.

12 (previously presented). The cell according to claim 11, which cell is a hybridoma.

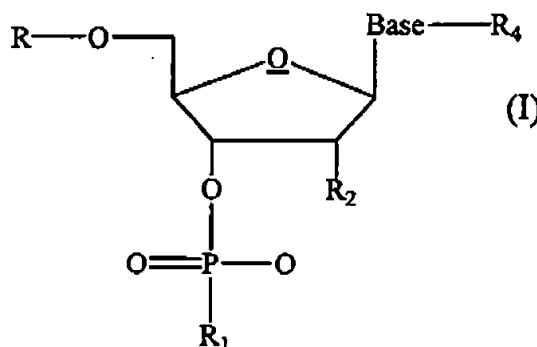
13 (cancelled).

14. (currently amended) A method for detecting incomplete deprotection of a synthetic oligonucleotide by immunoassay, said immunoassay comprising the steps of:

contacting a synthetic oligonucleotide to an antibody, wherein said synthetic oligonucleotide is produced by the process of protecting and then deprotecting a precursor molecule thereof, and wherein said antibody specifically binds to a synthetic oligonucleotide having an organic protecting group covalently bound thereto, which antibody does not bind to said synthetic oligonucleotide when said organic protecting group is not covalently bound thereto; and then

detecting the presence or absence of binding of said antibody to said synthetic oligonucleotide, the presence of binding indicating incomplete deprotection of said synthetic oligonucleotide;

wherein said oligonucleotide contains a protected nucleotide according to Formula (I):



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wherein:

(i) said protected nucleotide of Formula I is a 3' nucleotide; R is a covalent bond to an adjacent nucleotide; R₁ is a protecting group; R₂ is H or -OH; R₄ is absent; and Base is a purine or pyrimidine base; or

(ii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is -OR₃; R₃ a protecting group; R₄ is absent; and Base is a purine or pyrimidine base; or

(iii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is H or -OH; Base is a purine or pyrimidine base; and R₄ is a protecting group bonded to an amino group of said base.

15. (previously presented) The method according to claim 14, wherein said immunoassay is a heterogeneous immunoassay.

16. (previously presented) The method according to claim 14, wherein said immunoassay is a homogeneous immunoassay.

17. (previously presented) The method according to claim 14, wherein said immunoassay is a sandwich assay.

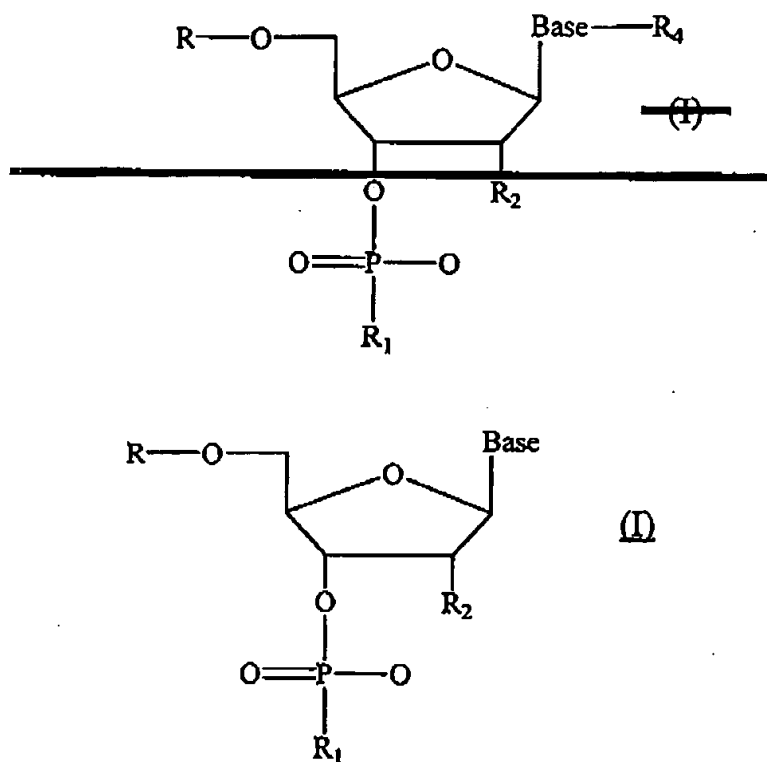
18. (previously presented) The method according to claim 14, wherein said oligonucleotide is immobilized on a solid support.

Claims 19-57 (cancelled).

58. (currently amended) The method according to claim 14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides and having a 3' nucleotide, and wherein said 3' nucleotide is a protected nucleotide according to Formula (I):

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wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a protecting group;

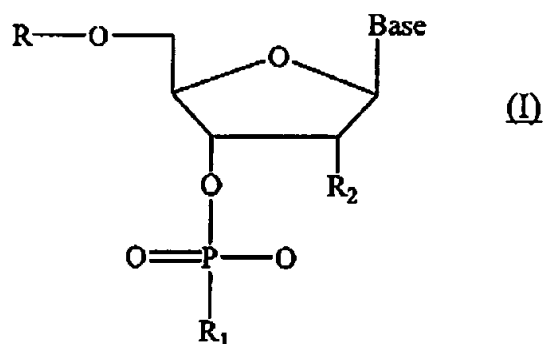
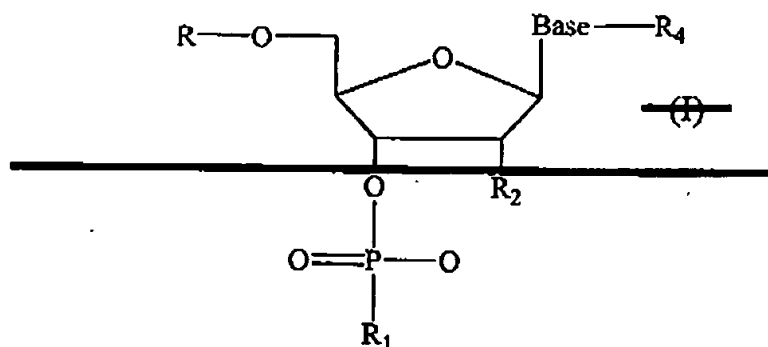
R₂ is H or -OH; and

Base is a purine or pyrimidine base.

59. (currently amended) The method according to claim 14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

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wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a covalent bond to an adjacent nucleotide;

R₂ is -OR₃;

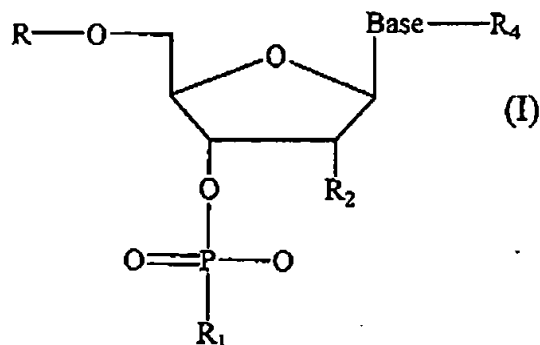
R₃ a protecting group; and

Base is a purine or pyrimidine base.

60. (previously presented) The method according to claim 14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

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wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a covalent bond to an adjacent nucleotide;

R₂ is H or -OH;

Base is a purine or pyrimidine base; and

R₄ is a protecting group bonded to an amino group of said base.

61. (previously presented) The method according to claim 14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected with photolabile protecting group.

62. (previously presented) The method according to claim 14, wherein said antibody is a polyclonal antibody.

63. (previously presented) The method according to claim 14, wherein said antibody is a monoclonal antibody.